

BALTIMORE • BOSTON • FT. LAUDERDALE • HOUSTON • JACKSONVILLE
MOBILE • NEW ORLEANS • NORFOLK • SAN FRANCISCO • SAN JUAN, P.R.
ST. LOUIS • TAMPA • VANCOUVER, B.C. • VANCOUVER, WA. • WILMINGTON, CA.



HULL AND CARGO SURVEYORS, INC.
INLAND MARINE - INSPECTIONS - LOSS PREVENTION - SHIP & AIR CARGO
249 TEWKSBURY AVENUE, RICHMOND, CALIFORNIA 94801
TEL. (415) 524-4402

FILE # SFH 83052

February 2, 1984

AT THE REQUEST OF

Mr. Steve Hastings, Marine Maintenance Foreman, Hyde Street Pier Museum of Historic Ships, San Francisco, California. The undersigned marine surveyor did conduct an inspection/survey of the S/V "C.A. THAYER" at PACIFIC DRYDOCK AND SHIP REPAIR, Oakland, California on October 14, 1983 and subsequent dates for the purpose of ascertaining the condition of the vessel as outlined in U.S. DEPARTMENT OF INTERIOR contract order number PX8140-3-0760.

Main and foremast were unstepped prior to drydocking. While the main mast was landed safely dock side, the foremast broke in two at the cross-tree during landing. The bow sprit broke minutes later. Mast and sprit were known to be severely deteriorated. (See our report SFH 82018, your reference PX8140-2-0716). All rigging was stripped from the masts and tagged. New masts were on site ready for rigging.

While the vessel was afloat work commenced on damaged hull planks located on the starboard beam. Damage stated to have occurred during a period of heavy weather, vessel holed herself along side the dock.

Hull side planking was removed in the following areas. From 3' aft of foremast after chain plate going aft to the larger fish loading port. Thirteen top timbers were exposed from first side plank below plank sheer to the plywood bottom sheathing just above the waterline.

Side planking removed was extremely deteriorated with rot, spongy and water soaked to the touch. Top timbers in way of removed planking were also noted with extreme deterioration as probed with a 6" buck type hunting knife and 14" Bayonet. The following side planks were removed. Side planking is numbered starting at the plank sheer calling the first plank below the plank sheer number 1 and numbering consecutively down.

Probing depth was determined in a similar manner to our preliminary report of survey of the vessels interior.

- 1) Side Plank #1, From 16" forward of #3 aft main chain plate going aft, 10'-2" of side plank removed.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-2-

February 2, 1984

- 2) Side Plank #2, Removed from 3'-6" forward of main mast aft chain plate going forward 8'-6".
- 3) Side Plank #3, Removed from 1'-9" aft of main mast aft chain plate going forward 29'-4".
- 4) Side Plank #4, Removed from 4'-5" aft of main mast most forward chainplate going forward 27'-8".
- 5) Side Plank #5, From 4' aft of main mast going forward, 37'-5" of side plank removed.
- 6) Side Plank #6, From 3'-7" forward of aft main chainplate going forward, 31'-10" of side plank removed.
- 7) Starting 14" aft of third aft main mast chain plate going forward, 31'-6" of planking removed.
- 8) Side Plank #8, Removed, starting 3'-8" forward of #3 aft main chainplate going forward 25'.
- 9) Side Plank #9, Removed from 16" aft of #3 aft main chain plate going forward 32'-1".
- 10) Side Plank #10, Removed from 3'-4" aft of gangway lower diagonal support going forward 19'.

NOTE:

With the exception of side plank #10 all side planks were extremely deteriorated from the core of the plank extending out.

With side planks removed, 13 top timbers were exposed from top timbers 18-31 as numbered along the working deck.

Construction consisted of two ten inch wide timbers butted together on 8" centers. Forward timber extends from futtocks to plank sheer. Aft timber extends through plank sheer to main rail.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-3-

February 2, 1984

At interval as noted in this survey, sets of 5 frames together, total width 4' were sighted in exposed area (see diagram enclosed). Second and fifth timbers go through plank sheer to main rail. First, third and fourth timbers extend to plank sheer only. Third timber does not extend past the futtock.

Probes used to determine deterioration were a 6" Buck knife and a 14" Bayonet. Deterioration measured as per depth of probe: Light 1", Moderate 1-3", Heavy 3-6", Extreme - over 6".

11) Top Timber 18 exposed at side plank #6 only, moderate deterioration found.

12) Top Timber 19 exposed at side plank #6 only.
Forward timber heavy deterioration.
Aft timber moderate.

13) Top Timber 20 exposed at side planks 6, 7, and 9.
Moderate deterioration forward timber.
Extreme deterioration aft timber.

14) Top Timbers 21 through 22 set of 5.
Timber 21 exposed at side planks 6, 7, 9 & 10.
Moderate deterioration between 6 and 7 side planks.
Extreme deterioration at side planks 9 and 10.

15) Top Timber 22 exposed between side planks 6-10.
Moderate deterioration between side planks 6, 7 & 8.
Heavy to extreme deterioration between side planks 9 and 10.

16) Timbers 23 and 24, set of 5.
Forward Top Timbers 23 exposed between side planks 3, 4, 6, 7 and 10. Moderate between side planks 6-9.
Heavy at side plank 10.
Aft Top Timber moderate to heavy between planks 3-8.
Extreme between side planks 9 and 10.

17) Top Timber 24 planks, forward - extreme between sides 6, 7, 8, 9 & 10.
Aft Timber extreme between 3-10 side planks.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-4-

February 2, 1984

18) Top Timber 25.

Forward Timber between side planks 3, 4 & 5 moderate to heavy.

Between side plates 6 and 7 heavy.

New Top Timber replacement at this dry dock between side plank 8, 9 and 10.

19) Top Timber 25.

Forward Timber moderate deterioration between side planks 3 through 10.

Aft timber moderate to heavy between side planks 3-6.

Extreme between side plank 7-10.

20) Top Timbers 27-18, set of 5 timbers.

1-Forward Timber moderate between side planks 3-10.

2-Top Timber moderate between side planks 3-8, replaced as new this drydocking between side planks 9 and 10.

3-No frame, empty cavity.

Top Timber 28 forward Timber replaced as new this drydocking between side planks 3-11.

Aft Top Timber replaced as new this drydocking between side planks 3-11.

21) Top Timber 29.

Forward Timber between side planks 1-2 moderate to heavy deterioration, replaced as new this drydock between side planks 3-11.

Aft timber between side planks sheer - 11 replaced as new this drydocking.

22) Top Timber 30.

Forward Timber extreme between side planks 1-11.

Aft Timber between side planks 1-5 moderate to heavy, extreme between side planks 6-11.

23) Top Timber 31.

Forward Timber moderate deterioration between side planks 1-10.

Aft timber moderate deterioration between side planks 1-10.

24) Top Timber 32 and 33, set of 5 timbers

1-Forward Top Timber moderate to heavy deterioration between side planks 1-10.

2-Top Timber heavy to extreme between side planks 3-10.

3-Top Timber extreme deterioration between side planks 1-10.

4-Top Timber 33, exposed at side planks 3, 4 & 5 moderate deterioration.

5-Top Timber exposed between side planks 3, 4 & 5 light deterioration



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-5-

February 2, 1984

25) Top Timber 34.

Forward and aft Timber light deterioration exposed between side planks 3, 4 and 5 only.

26) Top Timber 35.

No deterioration forward and aft timbers noted, exposed between side planks 3, 4 & 5 only.

27) Top Timber 36.

Exposed at side plank five only. No deterioration noted.

28) Top Timber 37.

Exposed at side plank #5 only.

Forward Timber moderate deterioration.

Aft timber light deterioration.

29) Top Timber 38.

Exposed at side plank 5 only.

Moderate deterioration to forward timber.

Aft Timber heavy deterioration.

30) Top Timber 39.

Exposed at side plank 5 only.

Moderate deterioration to forward timber.

Heavy deterioration to aft timber.

31) Top Timber 40.

Exposed at side plank 5 only.

Moderate deterioration to both timbers where exposed.

32) Top Timber 41.

Forward Timber exposed only at side plank 5 only.

Moderate deterioration to forward timber.

Areas of deterioration that were not replaced as noted were covered with red hand and treated with anti-fungicide.

DRYDOCKING

The "C.A. THAYER" was moved into drydock. Upon dewatering vessel, hog was measured at 14½" an increase of 1" since last drydocking in 1980.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-6-

February 2, 1984

Below waterline sheathing was removed in the following location in order to determine bottom conditions.

33) Starboard Bow area.

Directly under anchor cathead, second below wind and water sheath removed.

34) Starboard side sheathing located between fore mast and fourth aft chain plate. Second below wind and water sheath removed.

35) Starboard side sheathing located between third and fifth aft chain plate. Second below sheath removed.

36) Starboard side sheathing located wind and water strake, between fish loading port and next aft deck wash.

37) Starboard side sheathing located directly under 7th aft vertical hand rail post at raised house.

38) All keel and garboard strakes sheathing removed starboard side.

39) Port side sheathing removed garboard strake between seventh vertical hand rail post aft and raised house to fourth aft mizzen chain plate.

40) Port side sheathing located directly under first forward chain plate. Second below wind and water strake sheathing removed.

41) Port side sheathing removed, located 6 feet aft of most aft foremast chain plate. Second below wind and water strake sheathing removed.

Bottom planking was sounded and probed where physically possible. Worm deterioration was minimally confined primarily to the keel shoe area. Isolated wood deterioration was found under area number 32 of this report.

After completion of drydocking and associated renewal of sheathing and recoating with anit-foulant the vessel was moved to dock starboard side, for repairs of damages located in the stern quarter.

Removal of side planking this area revealed 13 timbers for inspection.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-7-

February 2, 1984

Side planking was removed from the transom going forward as counted from the sheer down consecutively.

42) Side Plank #1, 36'-9" removed.

43) Side Plank #2, 53'-5" removed.

44) Side Plank #3, 36'-9" removed.

45) Side Plank #4, 32' removed.

46) Top Timbers 42 and 43 set of 5.

- 1) Not sighted.
- 2) Moderate deterioration.
- 3) Moderate to heavy deterioration.
- 4) Light to moderate deterioration.
- 5) Moderate to heavy deterioration.

47) Top Timber 44.

Heavy to extreme forward timber.
Moderate deterioration aft timber.

48) Top Timber 45.

Extreme forward timber.
Moderate aft timber.

49) Top Timber 46.

Light to moderate deterioration both timbers.

50) Top Timber 47-48 set of 5.

- 1) Moderate to heavy forward timber.
- 2) Heavy deterioration aft timber.
- 3) Heavy deterioration.
- 4) Top Timber 48
- 5) Extreme deterioration forward timber.

51) Top Timber 49.

Forward moderate to heavy.
After timber light moderate.
Exposed deck beam in way of timber noted with 4" of end grain deterioration.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-8-

February 2, 1984

52) Top Timber 50-51 set of 5.

- 1) Heavy to extreme.
- 2) Moderate to heavy.
- 3) Moderate to heavy.
- 4) Extreme.
- 5) Moderate to heavy.

53) Top Timber 52.

Forward timber light to moderate.
Aft timber heavy to extreme.

54) Top Timber 53.

Moderate to heavy forward timber.
Aft timber new construction installed this drydocking.

55) Top Timber 54.

Forward timber moderate to heavy, sistered to new construction this drydocking.
Aft timber moderate to heavy.

56) Top Timber 55.

Heavy to extreme forward timber butted to new construction.
Aft timber heavy to extreme.

57) Top Timber 56.

Forward Timber heavy to extreme.
Aft Timber heavy to extreme.

58) Top Timber 57.

Forward top timber heavy to extreme butted to new construction this drydocking.
Aft timber moderate to heavy deterioration.

59) Top Timber 58.

Forward timber heavy to extreme deterioration, butted to newer construction but not as of this drydocking.
Aft timber deteriorated to the extreme.

60) Top Timber 59.

Forward and aft timbers deteriorated.



HULL & CARGO SURVEYORS, INC.

FILE # SFH 83052

-9-

February 2, 1984

61) Top Timber 60.

Forward timber heavy to extreme sistered to newer construction not installed this drydocking.

Aft timber heavy to extreme deterioration.

62) Top Timber 61.

Sisters added both sides of each timber.

Newer construction not installed this drydocking.

Both timbers evidenced heavy to extreme deterioration.

63) Top Timber 62.

Forward timber light deterioration.

Aft timber moderately deteriorated.

64) Top Timber 63.

Forward timber extremely deteriorated.

Aft timber extremely deteriorated, sistered to transom.

WORKING DECK

A cursory inspection was made of the working deck. Deck evidenced heavy pockets of decay and numerous exposed cavities which may be considered a tripping hazard to the general public. Obvious indications of water incursion below decks indicates serious deterioration of the deck throughout the vessel.

AFT HOUSE

Exterior corner posts evidenced moderate to heavy deterioration P/S sides of vessel. Scattered areas of deterioration noted to the tongue and groove exterior of the house all sides, and around the windows and the corners of the skylights.

FORECASTLE

Scattered areas of deterioration noted on all four sides of the forecastle. Ceiling beams clamps and the ceilings themselves also deteriorated.



HULL & CARGO SURVEYORS, INC.

SFH 83052

-10-

February 2, 1984

CONCLUSION

Vessel is felt to be in poor condition. Previous method of arresting deterioration have actually accelerated it. Plank removals at this dry docking revealed extreme deterioration to large numbers of structural members which were not repaired at this dry docking. Hull planking was renewed on starboard side only yet we have noted many areas port side of sprung planking and deterioration due in part to the lack of rotation of the vessel on an annual basis. It is our opinion that 75% of hull planking is in need of replacement on the port side, 50% on the starboard side. Repairs at this dry docking barely scratched the surface of deterioration found throughout the vessel. New timbers were added next to deteriorated timbers. Even with quantities of anti fungicide, rapid deterioration is expected.

Devised plans for repairs afloat would be satisfactory and should be undertaken in the next five years in order to save the vessel from a fate similar to that of the vessel "WAPAMA".

Vessel would have to be taken out of public viewing due to the amount of replacement timbers and accesses necessary for repairs. Most top timber port and starboard sides through to main rail are in desperate need of replacement. In their removal the heavily deteriorated plank shear and deck beam ends could be replaced along with sections of deck planking and interior ceilings in way of effected areas. Repairs as described above are by no means a shallow undertaking but a major project involving large quantities of materials and labor hours. The use of epoxies and other wood stabilizing products are not felt to be effective in deterioration as extensive as found on this vessel. Areas where epoxies and other sililiar products have been used on the vessel previously have only a cosmetic effect.

We cannot stress enough the conditions of this vessel in relation to public safety and seaworthiness, at any time sections of the deck and hull, their associated members could fail without notice with possible injury to the general public. Minor in these concerns are the deteriorated areas along the deck which may be considered a tripping hazard.

Vessels mooring and berthing arrangement exposes the vessel to high winds and surge during normal summer days and consequential damage has been noted previously. During storm periods especially from the north vessel exposure is felt to be even greater. In vessels present condition damage may occur in the future due in part to vessels mooring, mostly her general condition.



HULL & CARGO SURVEYORS, INC.

SFH 83052

-11-

February 2, 1984

The above report is a statement of opinion, made, signed and submitted without prejudice to the rights and/or interests of whom it may concern.

HULL & CARGO SURVEYORS, INC.


Bruce Cibley

BC/mab

Attached:



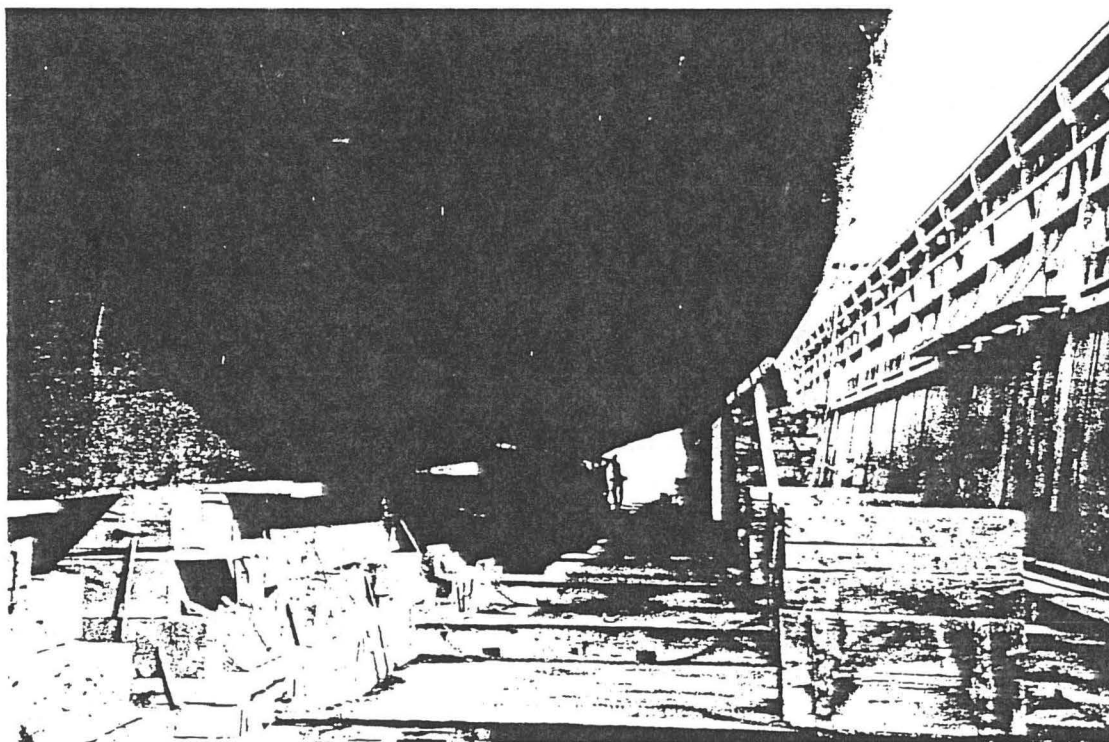
HULL & CARGO SURVEYORS, INC.

SFH 83052

-1-

February 2, 1984

PHOTO #1, "C.A. THAYER"
Noticable Hog.





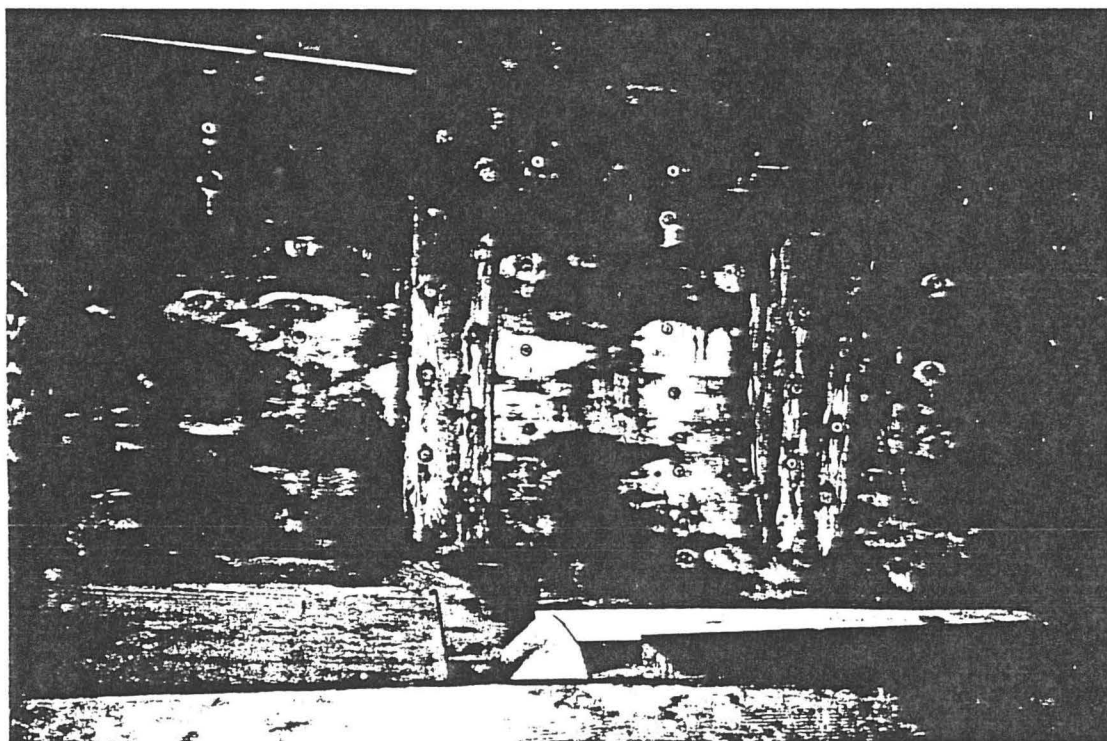
HULL & CARGO SURVEYORS, INC.

SFH 83052

-2-

February 2, 1984

PHOTO #2, "C.A. THAYER"
Water stained interiors from deck leaks.





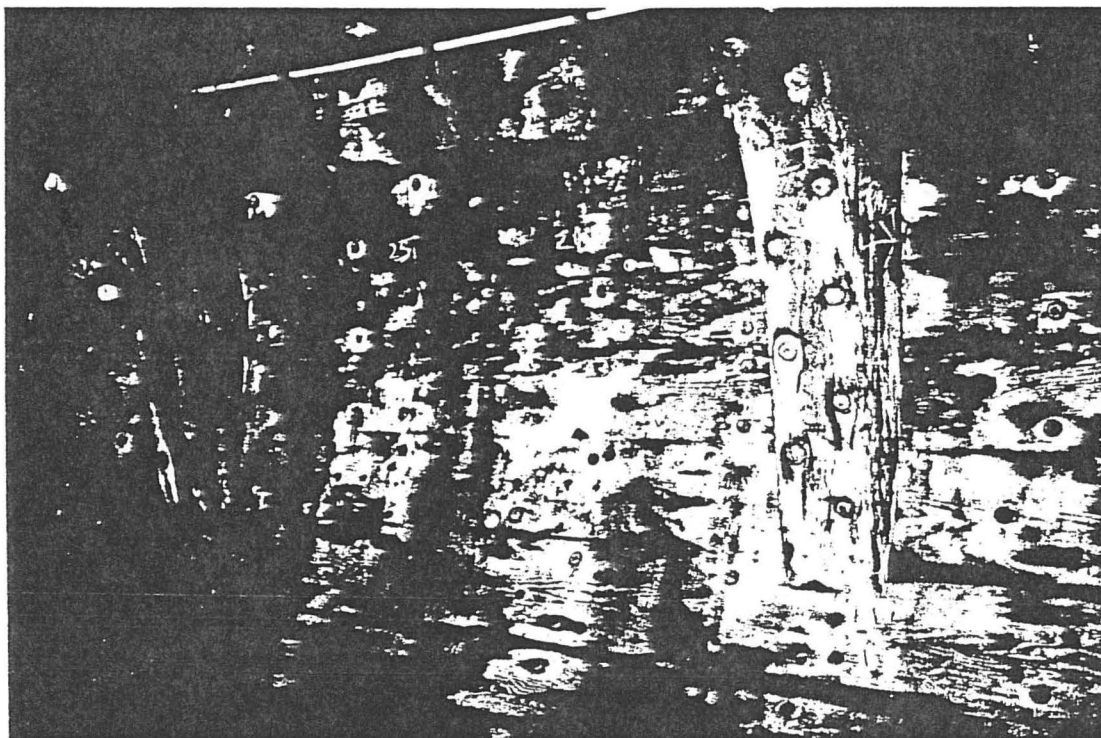
HULL & CARGO SURVEYORS, INC.

SFH 83052

-3-

February 2, 1984

PHOTO #3, "C.A. THAYER"
Water stained interiors from deck leaks.





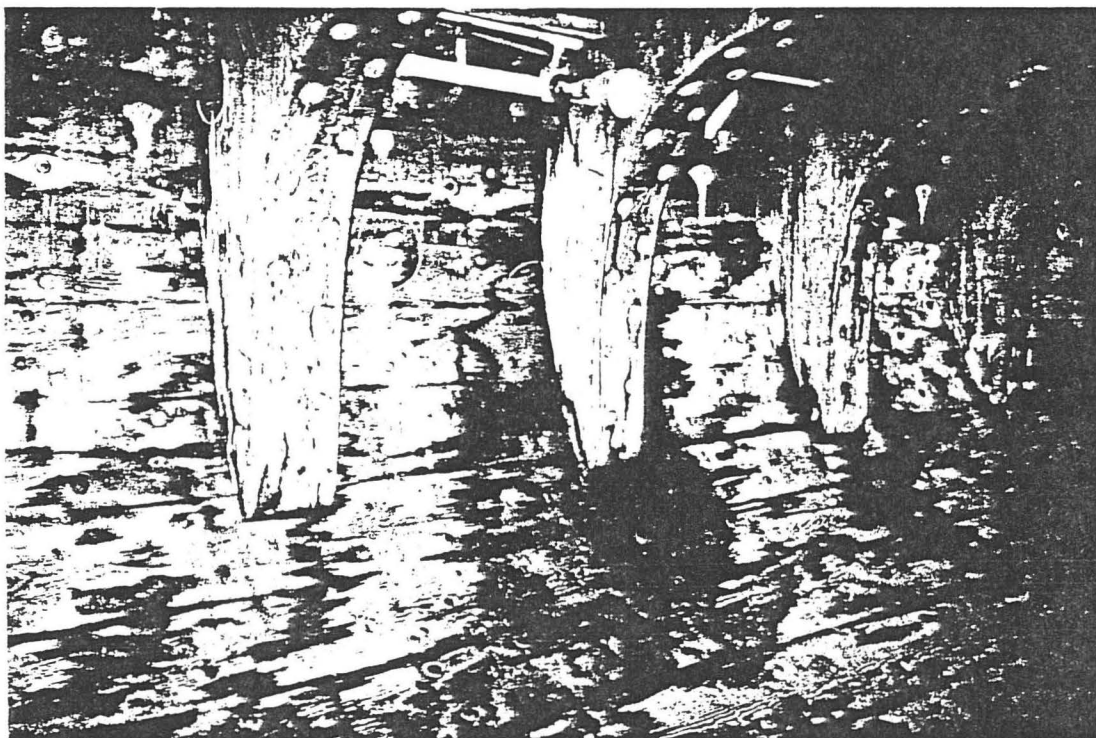
HULL & CARGO SURVEYORS, INC.

SFH 83052

-4-

February 2, 1984

PHOTO #4, "C.A. THAYER"
Water stained interiors from deck leaks.





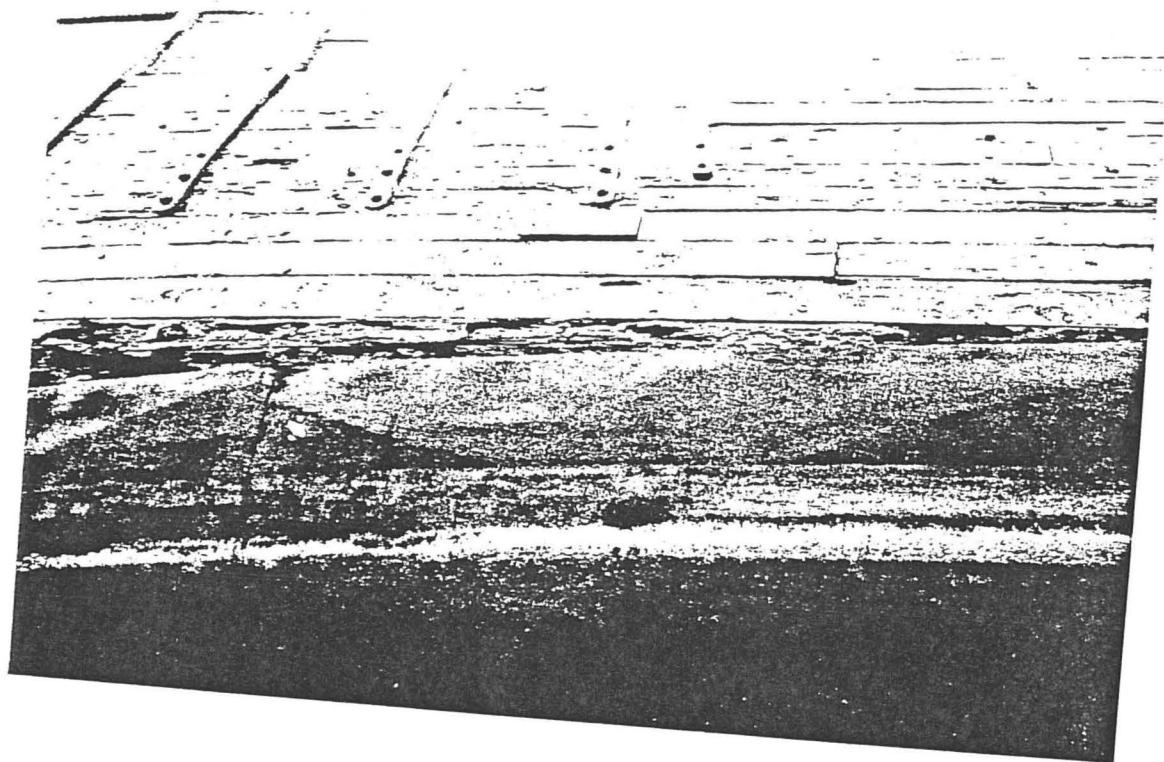
HULL & CARGO SURVEYORS, INC.

SFH 83052

-5-

February 2, 1984

PHOTO #5, "C.A. THAYER"
Port side deterioration along wind and water strake.





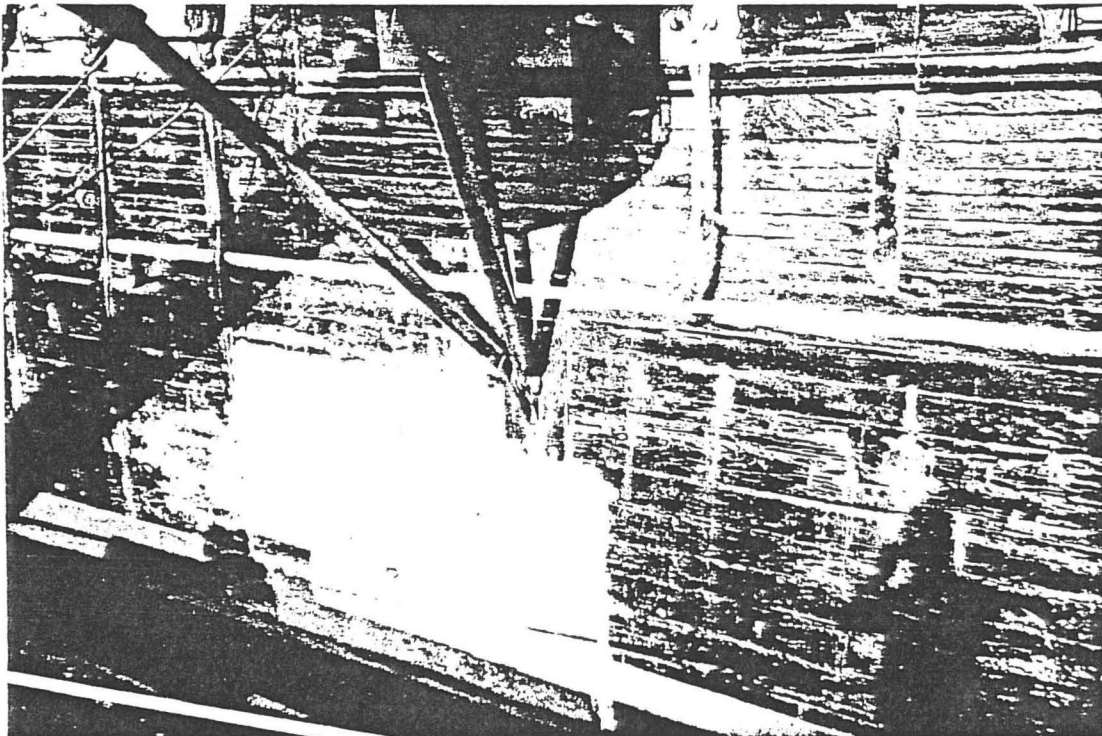
HULL & CARGO SURVEYORS, INC.

SFH 83052

-6-

February 2, 1984

PHOTO #6, "C.A. THAYER"
Starboard beam damage.





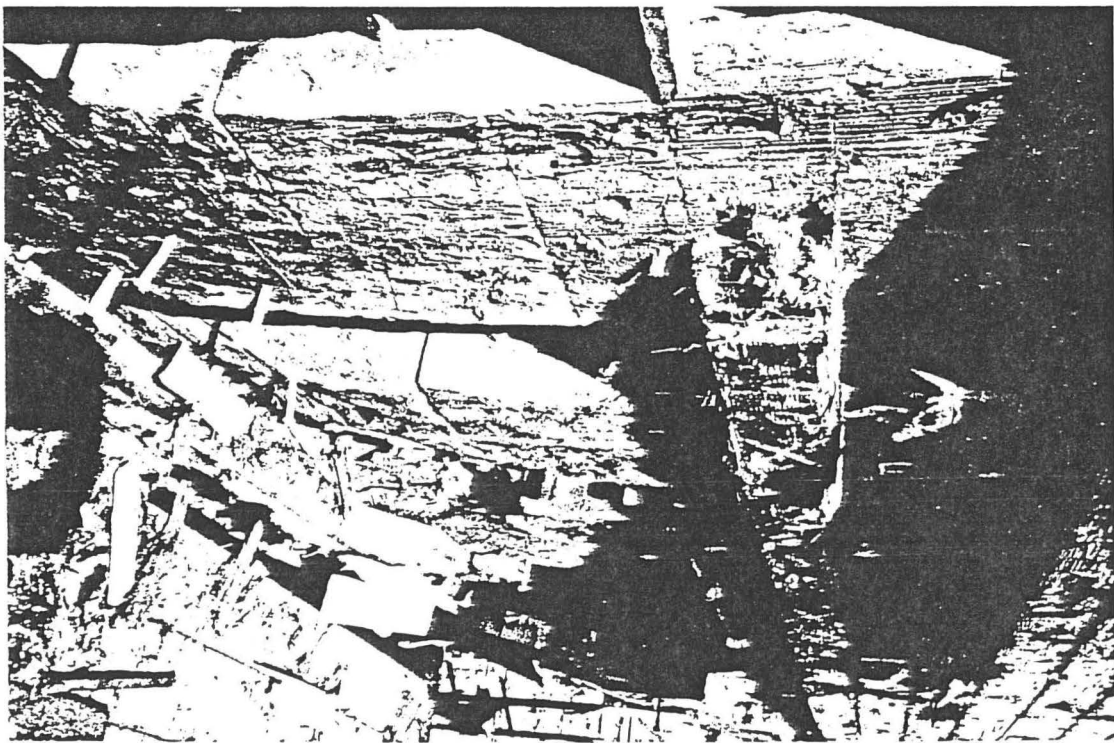
HULL & CARGO SURVEYORS, INC.

SFH 83052

-7-

February 2, 1984

PHOTO #7, "C.A. THAYER"
Starboard beam damage in way of damage areas.





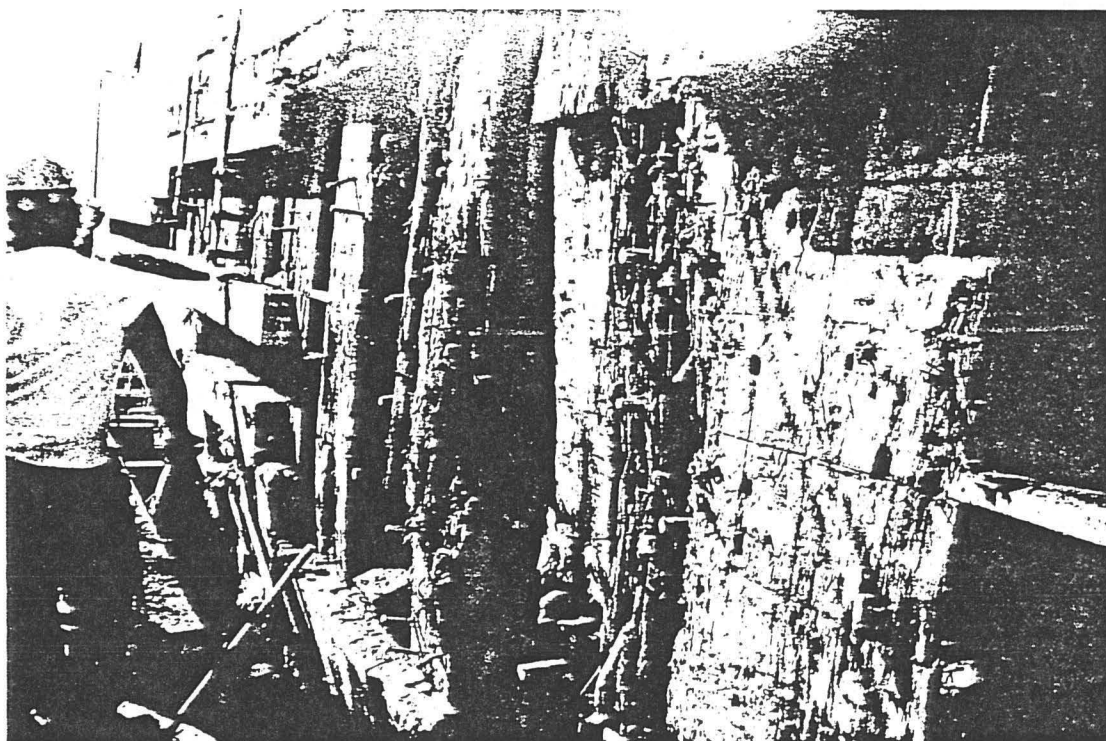
HULL & CARGO SURVEYORS, INC.

SFH 83052

-8-

February 2, 1984

PHOTO #8, "C.A. THAYER"
Starboard beam damage in way of damaged areas.





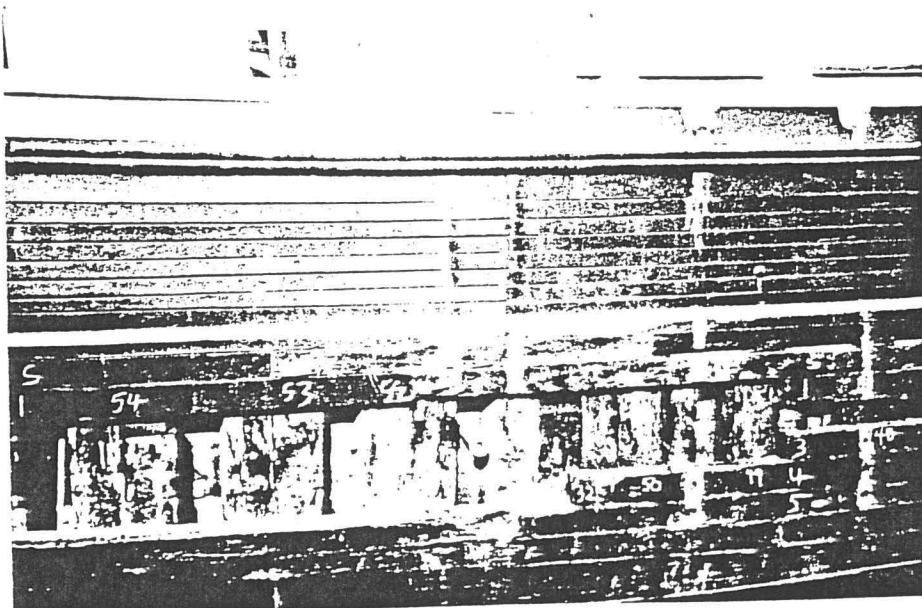
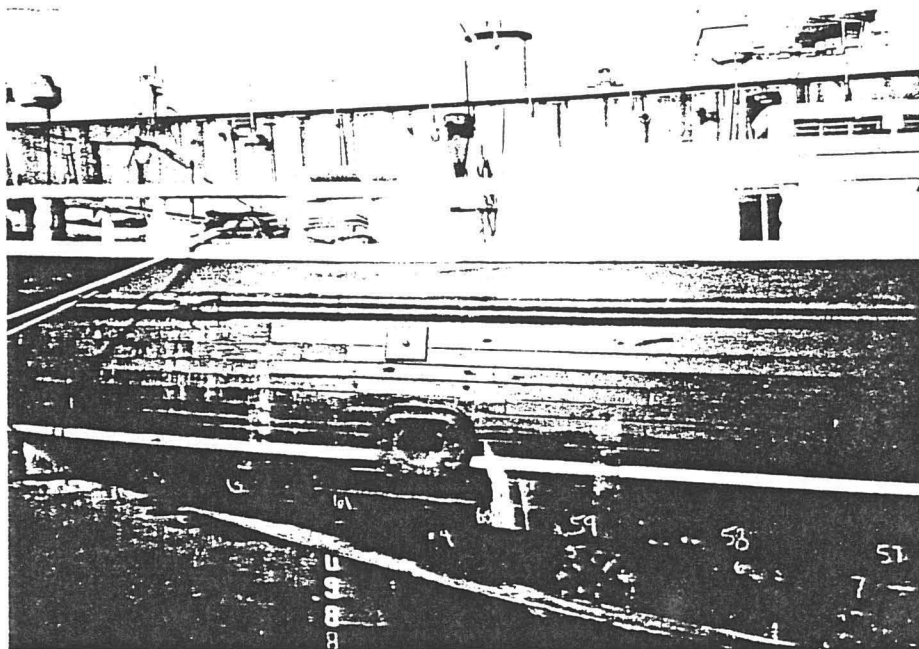
HULL & CARGO SURVEYORS, INC.

SFH 83052

-9-

February 2, 1984

PHOTO #9 & 10, "C.A. THAYER"
Stern section.





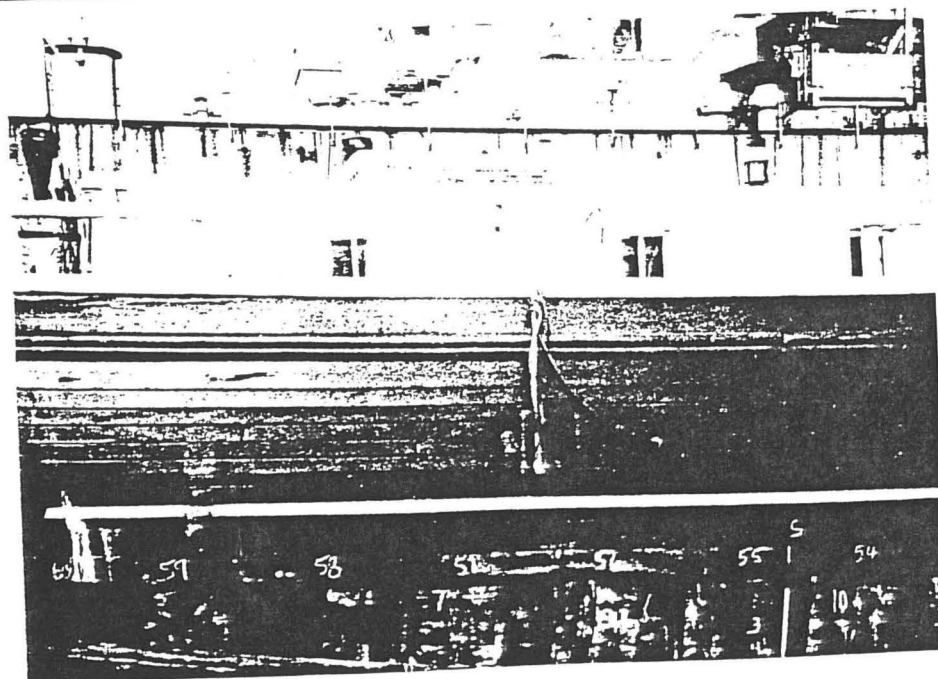
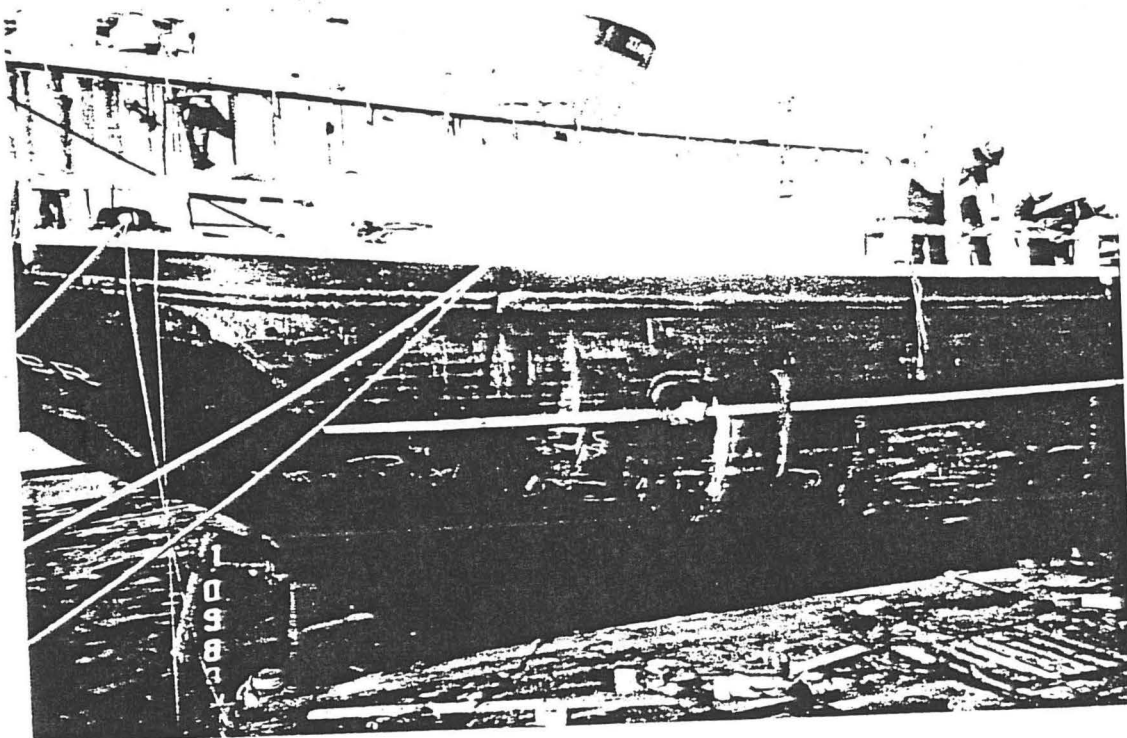
HULL & CARGO SURVEYORS, INC.

SFH 83052

-10-

February 2, 1984

PHOTO #11 & 12, "C.A. THAYER"
Stern Section.





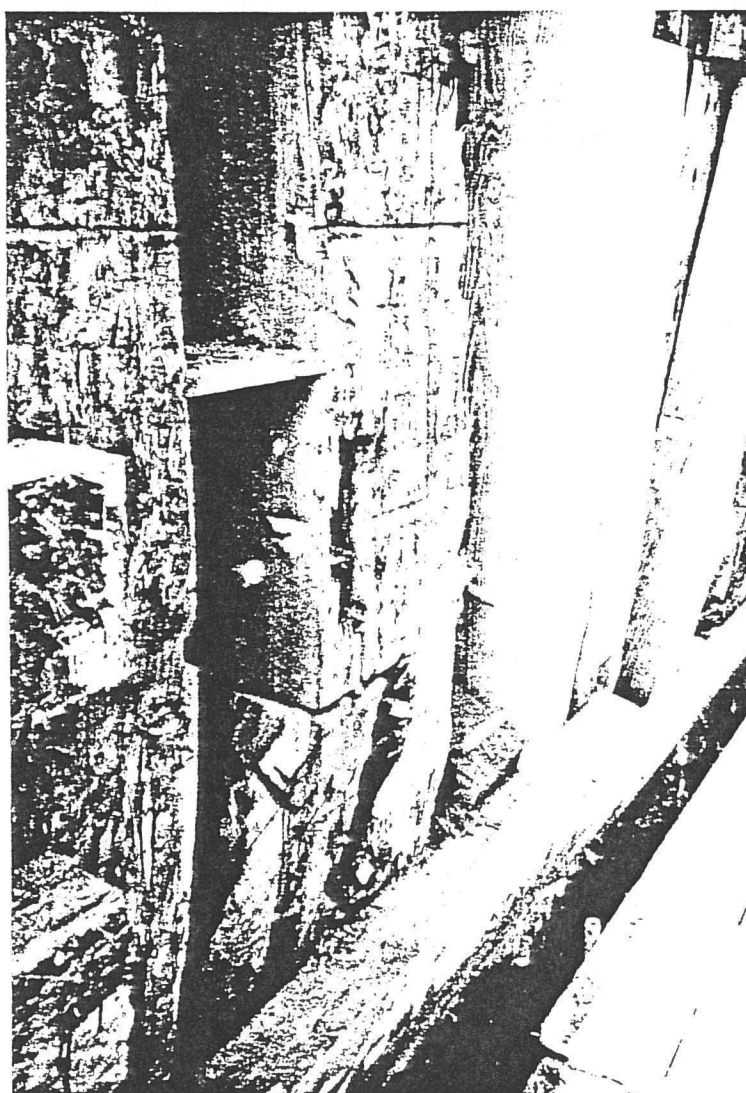
HULL & CARGO SURVEYORS, INC.

SFH 83052

-11-

February 2, 1984

PHOTO #13, "C.A. THAYER"
New work next to deteriorated wood.





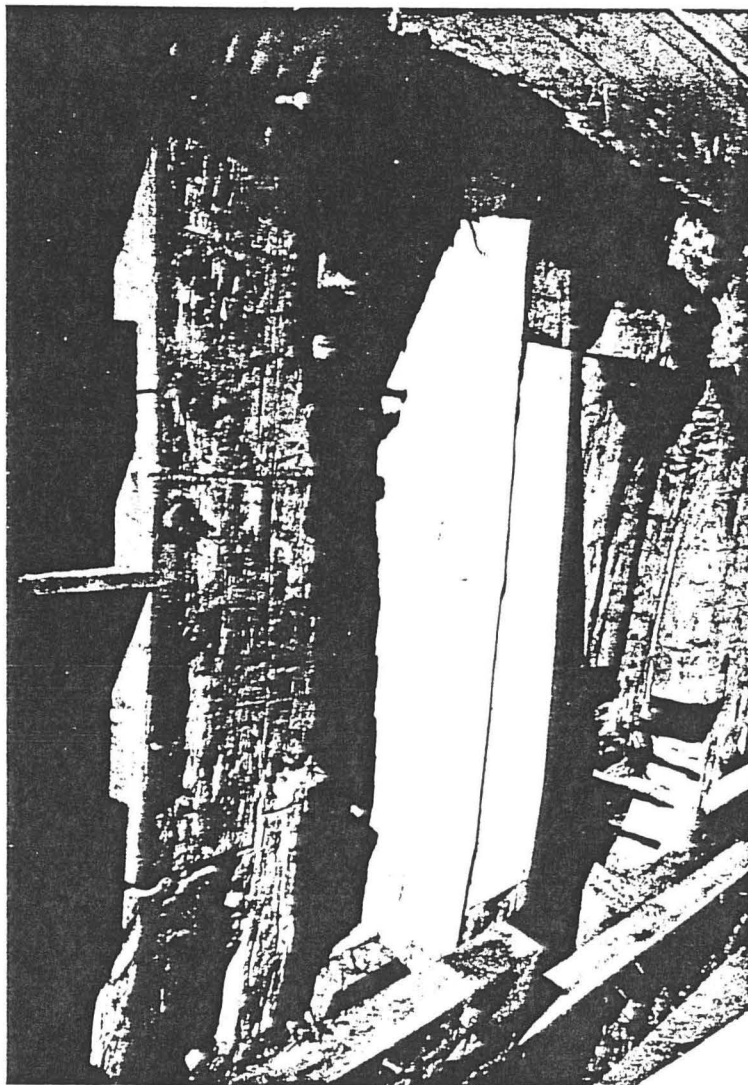
HULL & CARGO SURVEYORS, INC.

SFH 83052

-12-

February 2, 1984

PHOTO #14, "C.A. THAYER"
New work next to deteriorated wood.





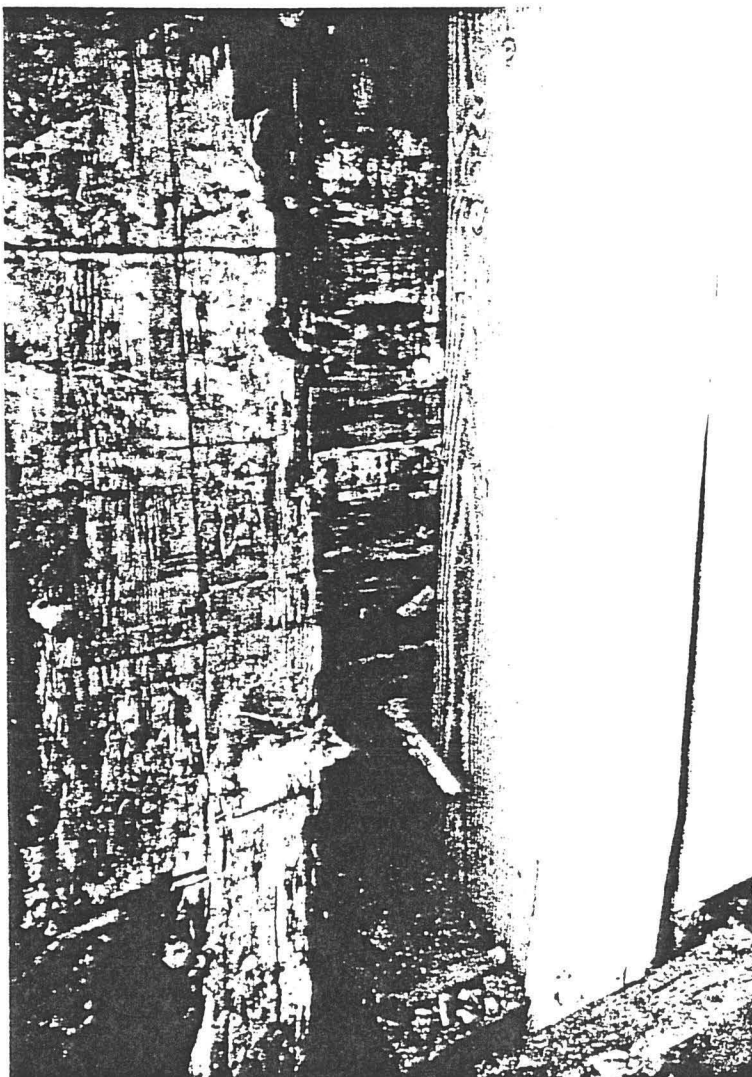
HULL & CARGO SURVEYORS, INC.

SFH 83052

-13-

February 2, 1984

PHOTO #15, "C.A. THAYER"
New work next to deteriorated wood.





HULL & CARGO SURVEYORS, INC.

SFH 83052

-14-

February 2, 1984

PHOTO #16, "C.A. THAYER"
Frame 55.





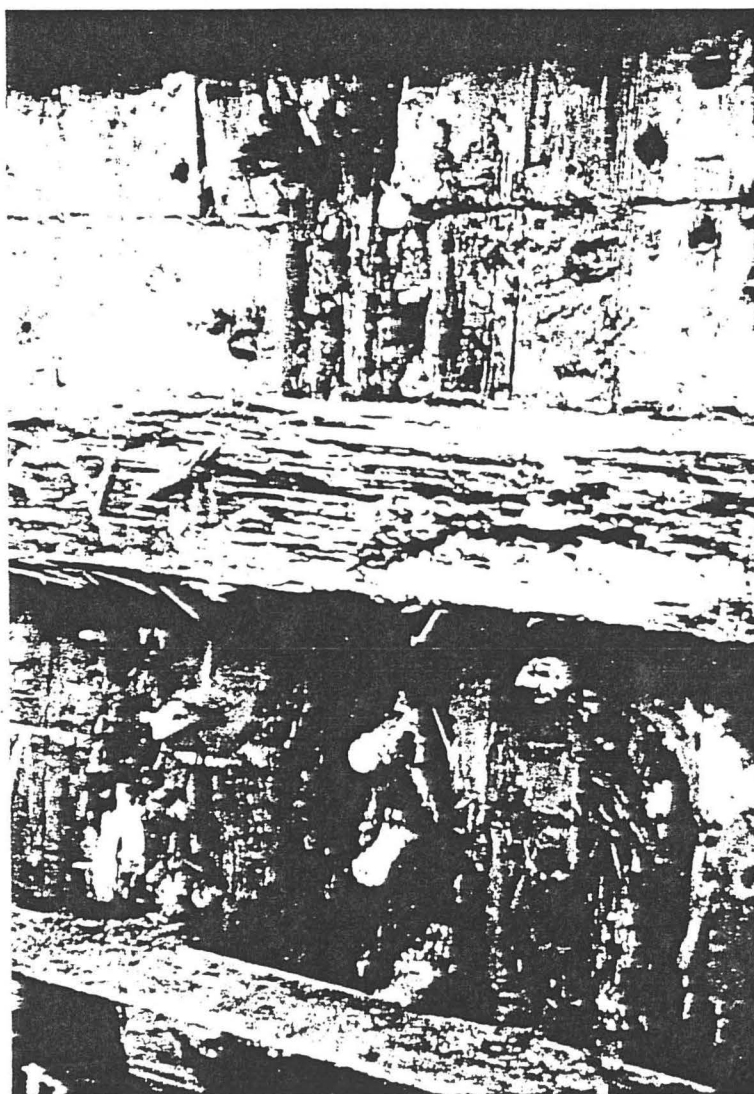
HULL & CARGO SURVEYORS, INC.

SFH 83052

-15-

February 2, 1984

PHOTO #17, "C.A. THAYER"
Frame 25.





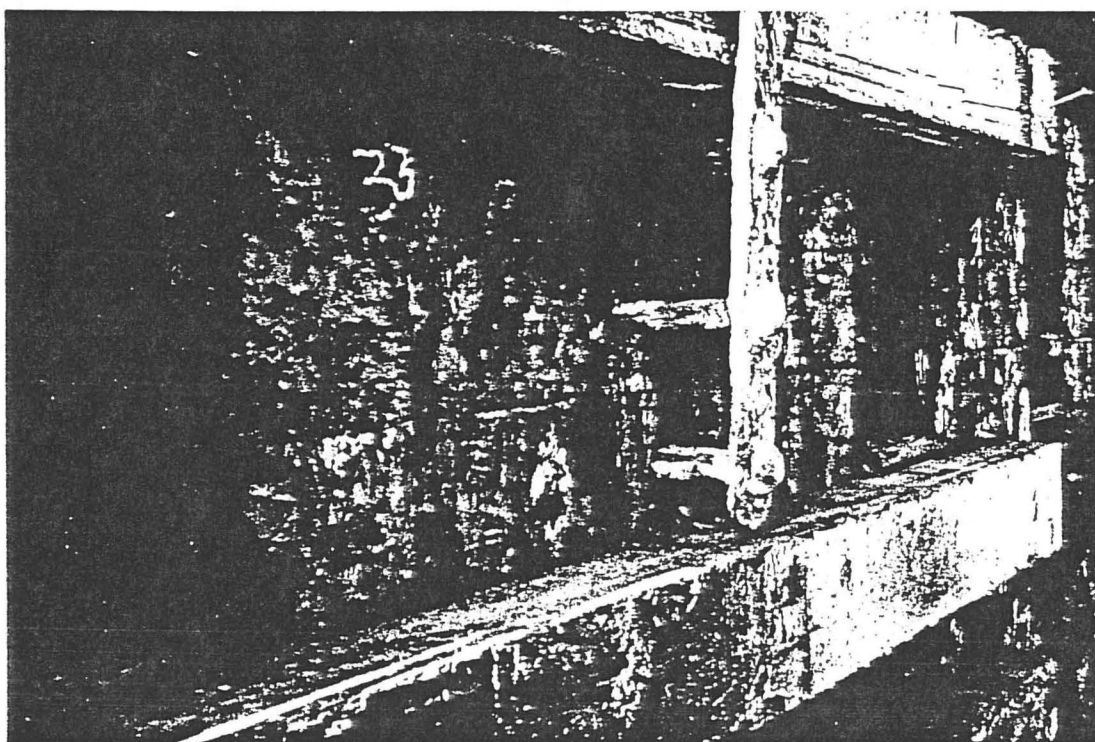
HULL & CARGO SURVEYORS, INC.

SFH 83052

-16-

February 2, 1984

PHOTO #18, "C.A. THAYER"
Frame 33.





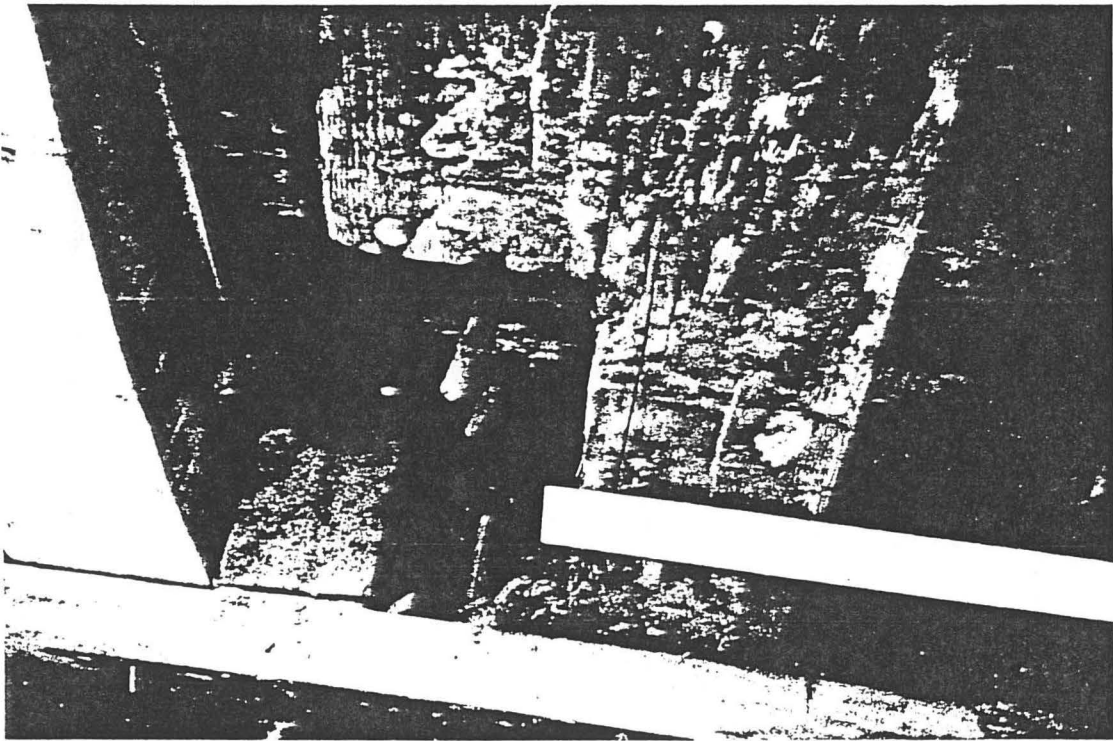
HULL & CARGO SURVEYORS, INC.

SFH 83052

-17-

February 2, 1984

PHOTO #19, "C.A. THAYER"
Frame 27.





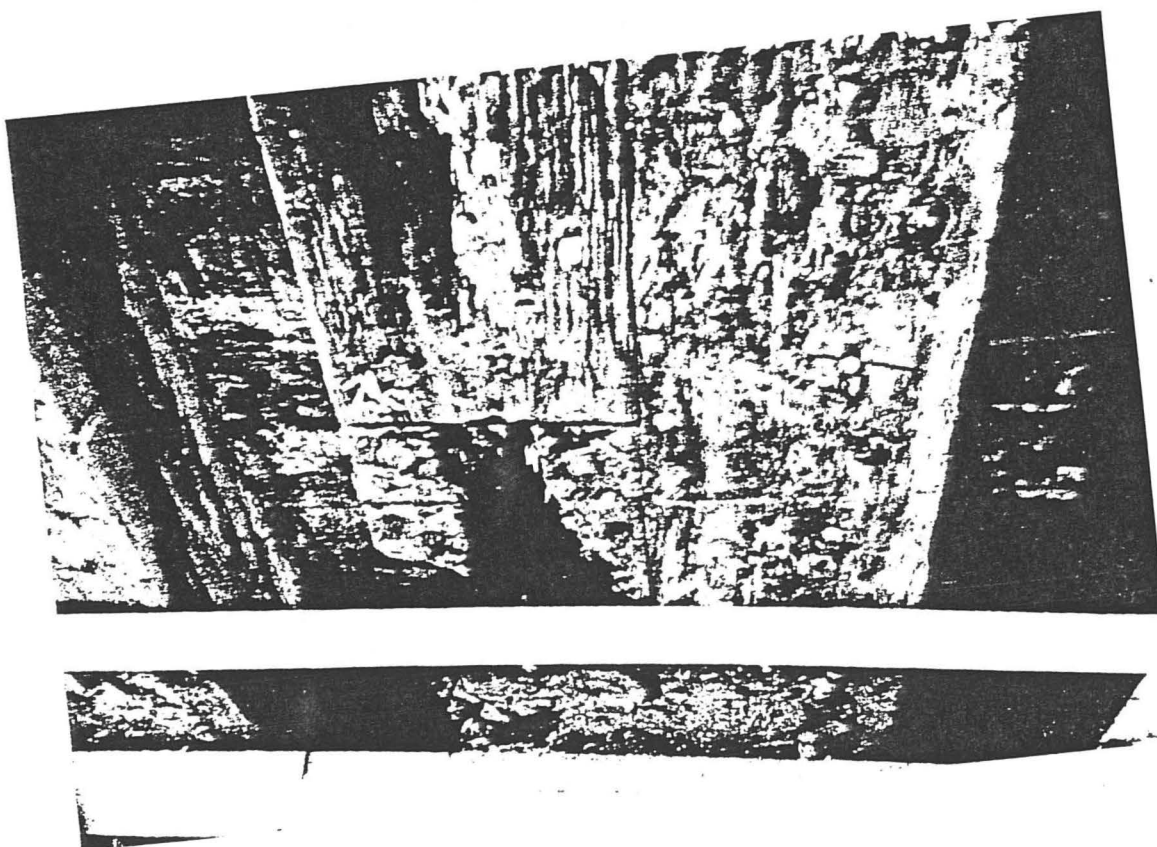
HULL & CARGO SURVEYORS, INC.

February 2, 1984

-18-

SFH 83052

PHOTO #20, "C.A. THAYER"
Frame 26.





HULL & CARGO SURVEYORS, INC.

SFH 83052

-19-

February 2, 1984

PHOTO #21, "C.A. THAYER"
Frame 63 to Transom.

